United Nations E/CN.17/2010/5

Economic and Social Council

Distr.: General
18 February 2010

Original: English

Commission on Sustainable Development
Eighteenth session
3-14 May 2010
Item 3 of the provisional agenda*
Thematic cluster for the implementation cycle 2010-2011 — review session

Review of implementation of Agenda 21 and the Johannesburg Plan of Implementation: chemicals

Report of the Secretary-General

Summary

Significant progress has been made in attaining the 2020 goal on sound management of chemicals, set at the World Summit on Sustainable Development, through the Strategic Approach to International Chemicals Management, the implementation of related international legal instruments, the strengthening of information-sharing and risk communication, the establishment of programmes on risk assessment, reduction and prevention, and the development of indicators and monitoring. Major groups have made important contributions to the promotion of chemical safety. This progress has not, however, been sufficient globally, with implications for the health and welfare of millions of people. The increasing production and consumption of chemicals in the developing countries and countries with economies in transition strains those countries' capacity for sound management of chemicals. Sound chemicals management is frequently accorded low priority in development plans and is consequently under-resourced. In many cases, national legislation and policies need to be updated. Lack of public awareness of potential health and environmental risks and lack of resources and human capacity to manage and reduce risks are challenges of increasing urgency. More active engagement of multiple stakeholders will be critical to addressing them.

* E/CN.17/2010/1.

10-24537 (E) 150310

Please recycle

Contents

		Page
I.	Introduction	3
	A. Background and context	3
	B. Chemicals and sustainable development	5
II.	Review of progress	6
	A. International cooperation on chemicals and sustainable development	6
	B. Risk assessment	10
	C. Information exchange and risk communication	11
	D. Risk reduction and prevention	14
	E. Prevention of illegal traffic in toxic and dangerous products	16
	F. Monitoring	17
	G. Means of implementation	18
III.	Continuing challenges	21

I. Introduction

1. The present report reviews progress in the implementation of Agenda 21,[1] the Programme for the Further Implementation of Agenda 21[2] and the Plan of Implementation of the World Summit on Sustainable Development ("Johannesburg Plan of Implementation")[3] in the thematic area of chemicals. It takes into account decisions of the second, third and fifth sessions of the Commission on Sustainable Development. The report was jointly prepared by the Department of Economic and Social Affairs of the Secretariat and the United Nations Environment Programme (UNEP). It draws on inputs provided by Governments, major groups and the United Nations system, in particular the Strategic Approach to International Chemicals Management (SAICM), the Inter-Organization Programme for the Sound Management of Chemicals (IOMC), the Intergovernmental Forum on Chemical Safety (IFCS), the Stockholm Convention on Persistent Organic Pollutants, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, the World Health Organization (WHO), the United Nations Institute for Training and Research (UNITAR) and the Economic Commission for Europe (ECE).

A. Background and context

2. Chemicals have played an indispensable role in fostering economic growth, improving standards of living and protecting public health. At the same time, if not managed soundly, they can pose significant dangers for the environment and society. As a result of this tension, chemicals have played a central role in the evolution of the concept of sustainable development.

3. While evidence of the human use of chemicals — for hygienic or medicinal purposes or for protection of crops or processing of metals or minerals — dates back to the earliest historical periods, the production as well as consumption of chemicals accelerated dramatically with the industrial revolution, and especially after the Second World War. The large-scale use of DDT as a disinfectant and pesticide contributed to disease control as well as crop protection and agricultural improvement. Two decades later, the discovery of longer-term adverse effects of DDT on humans as well as nature, especially as documented in Rachel Carson's *Silent Spring*, ushered in the sustainability revolution.

4. Since then, the approach to chemicals has evolved through several stages. In the first stage, mainly at the national level in developed countries, beginning in the 1960s and 1970s, a number of tools and approaches were developed, including outright banning of certain chemicals, establishment of maximum allowable limits (air quality standards or environmental quality standards), incentive systems

[1] *Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992*, vol. I, *Resolutions adopted by the conference* (United Nations publication, Sales No. E.93.I.8 and corrigendum), resolution 1, annex II.

[2] General Assembly resolution S-19/2, annex.

[3] *Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August-4 September 2002* (United Nations publication, Sales No. E.03.II.A.1 and corrigendum), chap. I, resolution 1, annex.

(e.g., cap and trade arrangements) for internalizing environmental externalities, collection and dissemination of relevant data and funding of research on the long-term impacts of chemicals on human health and environment.

5. While the responsibility to protect citizens from chemical risks rests mainly on national Governments, awareness of transboundary and global dimensions of the issues began to emerge by the early 1980s. These concerns were triggered by evidence of ozone depletion, the transboundary impact of acid rain and trade in hazardous materials, often to bypass strengthened regulations and restrictions in developed countries. The possibility of dumping wastes in developing countries, many of which did not have appropriate technical, financial or institutional resources to manage the impact, led to a new round of action, this time at the international level, to regulate international trade in hazardous substances. Over time, these policy initiatives led to the incorporation of relevant provisions in trade agreements, and provisions for capacity-building, technological cooperation and information-sharing.

6. A related round of policy actions, which also began in the 1980s, sought to address the global dimension of the problem, especially the case of ozone-depleting substances. This led to a combination of regulation (phase-out of chlorofluorocarbons (CFCs) and other ozone-depleting substances), incentives and international cooperation.

7. A fourth round of conceptual and policy development was triggered by the integrating vision of the United Nations Conference on Environment and Development and the Commission on Sustainable Development process, which laid the basis for joint action by developed and developing countries and by different stakeholders (Governments, businesses and civil society), and for the integration of environmental, developmental and social goals. This round has led to a number of important conceptual innovations and policy tools, including sound management, prior informed consent, technical cooperation and capacity-building for chemicals management and information-sharing.

8. Chapter 19 of Agenda 21 brings these strands together under the title of sound management of chemicals, which includes prevention, reduction, remediation, minimization and elimination of risks during their production, storage, transport, use and disposal, including the risks from chemicals in products and articles. The chapter proposes six programme areas for further work: (a) expanding and accelerating international assessment of chemical risks; (b) harmonization of classification and labelling of chemicals; (c) information exchange on toxic chemicals and chemical risks; (d) establishment of risk reduction programmes; (e) strengthening of national capabilities and capacities for management of chemicals; and (f) prevention of illegal international traffic in toxic and dangerous products.

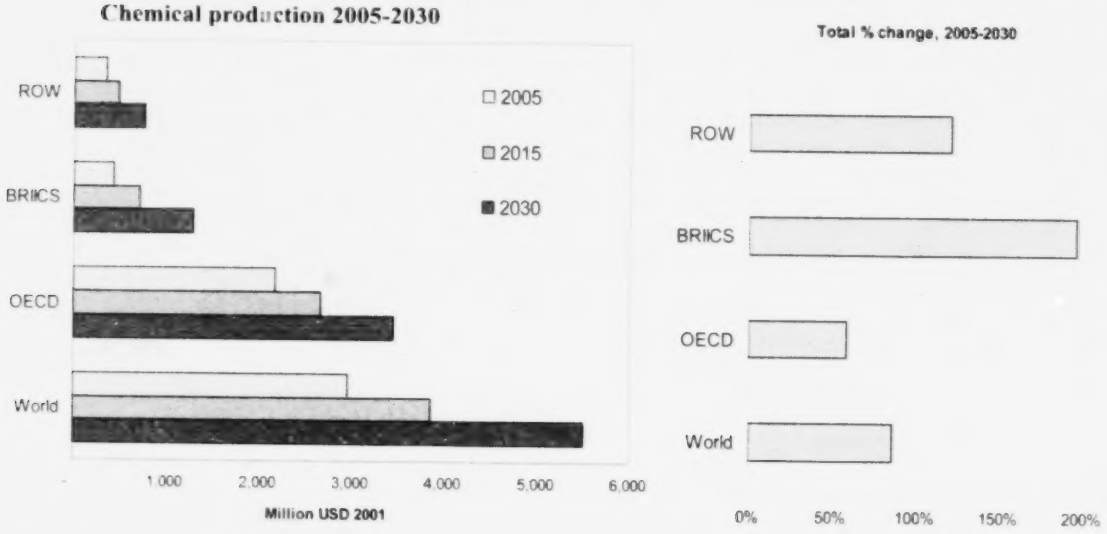
9. Section II of the present report provides a brief progress report on international agreements and policy actions on chemicals within the context of sustainable development. Following a review of the status of legal instruments, the section looks at progress in the six thematic areas listed above. Finally, Section III identifies the major gaps in implementation and the way forward.

B. Chemicals and sustainable development

10. As of December 2009, the Chemical Abstract Services Registry database[4] listed nearly 51 million natural or man-made chemicals, a number that has quadrupled since the first session of the Commission on Sustainable Development in 1993 with the addition of over 4,000 new chemicals every day. However, since most are not produced on a commercial scale, only about 1,000 new chemicals enter the market every year. In economic terms, in 2008, the chemicals industry had total sales of over $3 trillion[5] and employed 7 million people directly and supported another 20 million jobs in ancillary activities.[6]

11. While the bulk of chemicals production and consumption still takes place in countries of the Organization for Economic Cooperation and Development (OECD), the balance is shifting rapidly towards developing countries and countries with economies in transition. Under current trends, by 2020, the share of the latter group of countries in both production and consumption of chemicals will rise close to one third. This poses a management challenge to these countries, as many will need to strengthen their human and technical capacities to deal with the associated risks.

Chemical production 2005-2030



Abbreviations: BRIICS, Brazil, Russian Federation, India, Indonesia, China and South Africa; ROW, rest of the world.

Source: OECD, *Environmental Outlook to 2030*, 2008.

12. The management challenge extends into many domains, including the need for appropriate technical skills and capacities, mechanisms for information management and dissemination, and fragmentation of decision-making.

---

[4] See www.cas.org/cgi-bin/cas/regreport.pl.

[5] International Council of Chemical Associations, "Innovations for greenhouse gas emission reductions", 2009.

[6] International Council of Chemical Associations, progress report 2009.

13. Given the cross-sectoral nature of the issue, the regulation and management of chemicals in most countries is spread over several sectoral ministries — including agriculture, industry, labour, environment and health — and among several agencies within each ministry. Although initial steps towards policy coherence have been taken by many developing countries and countries with economies in transition — including through inter-ministerial committees, national focal points or integrated implementation plans — much more needs to be done.

II. Review of progress

A. International cooperation on chemicals and sustainable development

1. International legal instruments on chemicals

14. Today, the sound management of chemicals is addressed by 17 different multilateral agreements,[7] including the Food and Agriculture Organization of the United Nations (FAO) International Code of Conduct on the Distribution and Use of Pesticides (1985), the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989), the Montreal Protocol on Substances that Deplete the Ozone Layer (1989), the Convention on Safety in the Use of Chemicals at Work (International Labour Organization (ILO) Convention No. 170) (1990), the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (1998), the International Maritime Organization (IMO) International Convention for the Prevention of Pollution from Ships, the Stockholm Convention on Persistent Organic Pollutants (2002) and the International Health Regulations (2005).

Ratification and implementation status of the main international legal instruments relating to chemicals management (as of 10 February 2009)

			SC					
Region	*BC*	*RC*	*SC*	*NIP*	*MP*	*ILO*	*MARPOL*	*IHR*
Africa	48	37	48	28	53	3	33	53
Asia-Pacific	42	30	43	18	54	4	38	55
Central and Eastern Europe	25	17	20	12	25	1	22	25
Latin America and the Caribbean	30	21	29	11	33	4	29	33
West European and others	26	21	21	18	27	5	25	27
Total	**172**	**127**	**162**	**88**	**194**	**17**	**147**	**194**

Source: Strategic Approach to International Chemicals Management, document SAICM/ICCM.2/INF/1.

Abbreviations: BC, Basel Convention; RC, Rotterdam Convention; SC, Stockholm Convention; NIP, Stockholm Convention national implementation plan; MP, Montreal Protocol; ILO, ILO Convention No. 170; MARPOL 73/78, International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto; IHR, International Health Regulations (2005).

[7] UNEP, *Global Environment Outlook-4*, 2007, available at www.unep.org/geo/geo4/media/.

15. One of the earliest instances of international action to regulate the use of chemicals is the FAO International Code of Conduct on the Distribution and Use of Pesticides. The general population is more likely to be exposed to pesticides than to any other toxic chemicals because pesticides are: (a) designed to be toxic; (b) intentionally dispersed into the environment; (c) often handled by less educated or untrained people; and (d) commonly applied to food crops. The population of developing countries is particularly vulnerable because of a high percentage of people working in agriculture and inadequate training in judicious use and handling of these substances, and lower levels of monitoring of concentration in food and the environment. Adopted in 1985 and revised in 2002, the Code of Conduct provides guidance on the management of pesticides throughout their life cycle for all private and public entities. It has been endorsed by 192 FAO member States, and is supported by technical guidelines by an international expert panel giving practical advice. As of July 2009 around 31 guidelines had been developed.

16. The Basel Convention (see www.basel.int) was adopted in 1989 and came into force in 1992. It aims to protect human health and the environment against the adverse effects of the generation, management, transboundary movements and disposal of hazardous and other wastes, including the trade of chemicals at the end of their life cycle. It also strengthens measures applied to the entire waste cycle. In article 4.1, the Convention pioneered application of the prior informed consent procedure. Technical assistance and guidelines on the environmentally sound management of specific hazardous waste streams and further guidance material are provided as a support to developing countries and countries with economies in transition.

17. The Montreal Protocol entered into force in January 1989. It requires its parties to eliminate the production and import of nearly 100 chemicals, mostly halogenated hydrocarbons with ozone-depleting properties. The Protocol was one of the first international environmental agreements that included trade sanctions to achieve the stated goals. The Protocol has become "perhaps the single most successful international agreement to date".[8] All States Members of the United Nations have ratified the Protocol.

18. ILO Convention No. 170 and its accompanying Recommendation defined responsibilities of the competent authority, suppliers and employers, and duties and rights of workers, in implementing risk reduction measures in the workplace. The Convention, inter alia, emphasized the need to harmonize classification and labelling of chemicals, later implemented through the globally harmonized system of classification and labelling of chemicals (see para. 45 below). Besides Convention No. 170, the Convention concerning the Prevention of Major Industrial Accidents (ILO Convention No. 174)[9] and the Convention on the Transboundary Effects of Industrial Accidents[10] are also aimed at reducing risks from industrial accidents involving chemicals. The latter Convention has 39 parties, all from the ECE region, and includes some cross-cutting policies, e.g., on land-use planning generally, going beyond the siting of potentially hazardous installations.

19. The Rotterdam Convention (see www.pic.int) was adopted in 1999 and entered into force in 2004. It creates legally binding obligations for the implementation of

[8] Quotation from former Secretary-General Kofi Annan, on www.unep.org.

[9] Text at www.ilo.org/ilolex/cgi-lex/convde.pl?C174.

[10] Text at www.unece.org/env/teia/text.htm.

the prior informed consent procedure. Parties must decide whether they will allow the import into their territories of chemicals listed in annex III to the Convention, and must then notify the secretariat of their decision by submitting what is termed an "import response", indicating whether or not they consent to import, and under what specified conditions. Currently, 40 chemicals, listed in annex III to the Convention, are subject to the PIC procedure; these include 25 pesticides, 4 severely hazardous pesticide formulations, and 11 industrial chemicals. More chemicals are expected to be added in the future.

20. The Stockholm Convention (see www.pops.int) was adopted in 2001 and entered into force in 2004. It is a global treaty to eliminate or reduce the release of persistent organic pollutants. It initially targeted 12 substances or groups of substances; nine more were added in 2009 through a consensus decision of the parties. The Convention also includes provisions for helping developing countries and countries with economies in transition to phase out and clean up stockpiles of certain chemicals.

21. There is a strong support to enhance synergies among chemicals-related multilateral agreements. At their respective meetings in 2008 and 2009, the conferences of the parties to the Basel, Rotterdam and Stockholm Conventions agreed to enhance cooperation and coordination to strengthen implementation of the Conventions at the national, regional and global levels.

22. In order to enhance coordination within the United Nations system, the Inter-Organization Programme for the Sound Management of Chemicals (IOMC) was established in 1995. Its goal is to increase the coherence and effectiveness of chemicals programmes of participating organizations (FAO, ILO, UNEP, the United Nations Industrial Development Organization (UNIDO), UNITAR, WHO and OECD) as well as observers (UNDP and the World Bank).

Box 1
Worldwide consumption of CFCs

One example of successful international governance on chemicals is the reduction of the use of ozone-depleting substances. According to the internationally agreed phase-out schedules under the Montreal Protocol, the consumption of CFCs has been totally phased out in developed countries, and the phasing out in developing countries is being implemented ahead of schedule.

Source: UNEP, *Global Environment Outlook-4*, 2007.

23. In addition to the adopted legal instruments on chemicals, the international community continues to assess the need for additional international action, for example on mercury. In February 2009, the Governing Council of UNEP requested the Executive Director of the Programme to convene an intergovernmental negotiating committee with the mandate to prepare a globally legally binding instrument on mercury. The committee was to commence its work in 2010 with the goal of completing it in 2013.

2. Strategic Approach to International Chemicals Management

24. The focus provided by Agenda 21 on the sound management of chemicals led to a number of developments which culminated in 2006 with the adoption of the Dubai Declaration on International Chemicals Management and the formal establishment of the Strategic Approach to International Chemicals Management (SAICM). At its second, third and fifth sessions, held in 1994, 1995 and 1997 respectively, the Commission on Sustainable Development assigned the responsibility for sound management of chemicals throughout their life cycle to those responsible for their production.[11] Paragraph 23 of the Johannesburg Plan of Implementation went further to call for a strategic approach to the issue.

25. The Johannesburg Plan of Implementation set the target date of 2020 for ensuring that all chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment.[12] SAICM is not intended to replace existing binding or non-binding instruments, but to serve as a voluntary policy framework to build upon such instruments.[13]

26. A few features of SAICM need to be mentioned. First, its regional cooperation model is considered instrumental to progress in implementation. The SAICM Overarching Policy Strategy notes that "regional meetings will facilitate input on activities, preparation for future meetings, and exchange of regional expertise and information".[14] Each regional group has established a focal point and nominated regional representatives to the Executive Board of the SAICM Quick Start Programme. Africa, Central and Eastern Europe and Latin America and the Caribbean have developed multi-stakeholder coordination committees to facilitate regional SAICM implementation.

27. Second, in line with the provisions of various international instruments, SAICM endorses an open and multi-stakeholder participatory approach. One concrete manifestation is that six international networks of non-governmental organizations[15] have registered as the SAICM non-governmental focal points and are working together to promote SAICM implementation in all regions. They have documented more than 300 activities conducted by public interest organizations, which include work on 68 of the 273 items in the SAICM Global Plan of Action. Other public health and environmental organizations and trade unions have also made important contributions to the promotion of chemical safety. Similarly, the private-sector efforts to promote chemical safety include such voluntary initiatives as the Responsible Care programme (see www.responsiblecare.org).

28. Third, the inter-agency coordinating role of IOMC is highly relevant to the implementation of agreed SAICM priorities. The SAICM Global Plan of Action lists nearly 220 activities that identify one or more IOMC organizations as an actor.

---

[11] See E/1994/33/Rev.1, E/1995/32 and E/1997/29.

[12] Johannesburg Plan of Implementation (note 3 above), para. 23.

[13] These are referred to in section VI of the SAICM Overarching Policy Strategy, available at www.saicm.org/documents/SAICM%20texts/standalone_text.pdf.

[14] Ibid., para. 26 (a).

[15] Health Care Without Harm; International POPs Elimination Network; International Society of Doctors for the Environment; Pesticide Action Network International; Women in Europe for a Common Future; and World Federation of Public Health Associations.

B. Risk assessment

29. Risk assessment is the first step in the identification and deployment of measures to minimize the adverse effects of chemicals on humans and the environment.

30. Risk is defined as a combination of three factors: hazard, exposure and vulnerability. The risk from a chemical is directly proportional to its intrinsic hazardous properties, such as reactivity, toxicity, ecotoxicity, persistence in the environment or bioaccumulation. All chemicals are intrinsically hazardous; the only difference is in the dose required to cause significant adverse effects. Governments agreed at the United Nations Conference on Environment and Development that efforts to assess chemical hazards at the international level need to be expanded and accelerated. For exposure evaluations, the local circumstances need to be taken into consideration. Besides the hazard, risk is determined by the probability of exposure of humans or the environment and the vulnerability of the relevant population.

1. Hazard assessment

31. Chapter 19 of Agenda 21 calls for expanded and accelerated efforts at the international level, including increased coordination among the United Nations agencies and other relevant organizations, to assess chemical hazards. Paragraph 23 of the Johannesburg Plan of Implementation explicitly reiterates this call. While progress has been made in OECD countries on hazard and exposure assessment, it is behind schedule. Moreover, significant gaps remain in making this knowledge accessible and operational in non-OECD countries.

32. With around 1,000 new chemicals introduced to the market annually, national authorities in most developed countries have transferred some of the hazard assessment burden to the industry. However, the final assessment and resulting regulatory action still has to lie with the government authorities. In most cases, the information for hazard assessment is provided by those responsible for production or marketing of chemicals. This is done through standardized tests, which may generate toxicological data (for the effects on humans) or eco-toxicological data (for the effects on the environment).

33. Methodologies for testing and assessing chemical hazards have mainly been developed through collaboration among OECD countries. The international compilation has been organized under the joint WHO/UNEP/ILO International Programme on Chemical Safety (IPCS) and the International Agency for Research on Cancer (IARC). Although resource constraints have slowed the pace, efforts have been made in developing the concise international chemical assessment documents. Since 1998, 75 such documents have been produced. IARC has since 1971 evaluated the carcinogenic potential of more than 900 agents (not just chemicals), of which approximately 400 have been identified as carcinogenic or potentially carcinogenic to humans.

34. In 1991, OECD countries started a programme on initial hazard assessments of high production volume chemicals (those produced or imported in excess of 1,000 tons per year in at least one country or region). The programme envisioned around 200 chemicals being assessed per year. However, due to financial, human resources and other constraints, only around 1,000 chemicals have so far been assessed.

2. Exposure assessment

35. Risks can only be determined if there is information on exposures or exposure potential. To assess exposure potential one has to understand the behaviour of a chemical in the environmental media under different conditions. Again, relevant agencies in OECD countries have developed models for such assessment. While some of these are applicable to non-OECD countries as well, the differences in environmental and exposure conditions may require additional information. These countries also would be helped if simplified or generic models could be developed for application to different climates and environmental conditions.

3. Challenges

36. Risk assessment requires specialized technical and scientific knowledge. In most non-OECD countries, there is limited capacity to assess and manage the risks from pesticides, whereas the capacity to assess and manage the risk from industrial chemicals is generally absent.

37. There is an urgent need to reinforce the capacities of these countries for assessing chemical risks. Coherent international tools and guidelines on chemical risk assessment, which also reflect the environmental perspective, are urgently needed. These assessment tools and methodologies need to be adapted to the national environmental, social and economic conditions.

C. Information exchange and risk communication

38. Access to and exchange of information is fundamental to attaining the 2020 goal. Although more information on chemicals has been available since the World Summit on Sustainable Development, there is still significant room for improvement, in particular for dissemination and exchange of information on chemical safety matters, including the potentially hazardous chemicals in products.

1. Pollutant release and transfer registers

39. Pollutant release and transfer registers are systems to collect and disseminate information on environmental release and transfers of toxic chemicals from industrial and other facilities. They were established in several countries after the 1984 Bhopal disaster. The United Nations Conference on Environment and Development affirmed the "right to know" of communities and workers about toxic chemicals and other substances of concern. The Johannesburg Plan of Implementation, in paragraph 23 (f), encouraged development of coherent and integrated information on chemicals, such as through national pollutant release and transfer registers.

40. After the United Nations Conference on Environment and Development, a guidance manual for establishing pollutant release and transfer registers has been developed through a multi-stakeholder approach. The manual has served as the basis in many countries for capacity-building activities for the introduction of registers. Currently 23 countries have established a functioning national register. Many more are in the process of developing their national reporting system (see www.prtr.net).

41. Pollutant release and transfer registers offer an established, proven multi-stakeholder mechanism capable of providing periodic and reliable data on releases

and transfers of pollutants of national priority. Many of the global environmental agreements, including SAICM and the Stockholm Convention, have recognized and endorsed pollutant release and transfer registers as an effective mechanism in achieving their goals.

42. The Protocol on Pollutant Release and Transfer Registers was adopted at a meeting of the parties to the ECE Aarhus Convention in May 2003.[16] The Protocol is the first legally binding international instrument on pollutant release and transfer registers. Presently it has 19 ratifications,[17] and is open to participation by all States Members of the United Nations.

43. Lack of institutional capacity and a deficiency in laboratory infrastructure are major barriers to pollutant release and transfer registers. Furthermore, while some countries have implemented registers, their effectiveness is restricted by the limited number of chemicals covered, their dependence on industry estimations with very little monitoring or review, and the specific challenges pertaining to release from diffuse sources.

Box 2
Legislative structure on chemicals management in the European Union

The European Union has adopted REACH, which is the acronym for the Regulation for Registration, Evaluation, Authorization and Restriction of Chemicals. It entered into force on 1 June 2007 and aims to streamline and improve the legislative framework on chemicals of the European Union. REACH makes industry bear most responsibilities for managing the risks posed by chemicals and providing appropriate safety information to their users.

2. Harmonization of classification and labelling of chemicals

44. Significant progress has been made in developing a globally harmonized system of classification and labelling of chemicals. The universal adoption of this system will provide a basis for uniform identification of chemical hazards, improve hazard communication, facilitate trade in chemicals, reduce the need for animal studies and ultimately improve overall human and environmental safety in the production, transport, use and disposal of chemicals.

45. After the United Nations Conference on Environment and Development, ILO, OECD and the United Nations Committee of Experts on the Transport of Dangerous Goods cooperated to elaborate the globally harmonized system of classification and labelling of chemicals. The system contains all criteria necessary for classification of chemicals according to their intrinsic hazardous properties (physical hazards such as flammability, hazards to health and hazards to the environment), as well as all necessary provisions for hazard communication through labelling (identification of

[16] The meeting took place in the framework of the fifth Ministerial Conference "Environment for Europe", held in Kyiv from 21 to 23 May 2003.

[17] Includes ratifications, approvals, acceptances and accessions as of 10 August 2009.

chemical, pictogrammes, symbols, hazard statements, precautionary statements or signal words) and safety data sheets.

46. In 1999, the Economic and Social Council decided to establish the Subcommittee of Experts on the Globally Harmonized System of Classification and Labelling of Chemicals.[18] The first task of the Subcommittee was to make the globally harmonized system available for worldwide use and application. The first version of the document (ST/SG/AC.10/30), which was intended to serve as the initial basis for the global implementation of the system, was published in 2003. First, second and third revised versions were published in 2005, 2007 and 2009 respectively.

47. The Johannesburg Plan of Implementation encouraged countries to implement the globally harmonized system as soon as possible with a view to having the system fully operational by 2008. Such an objective was ambitious and has not yet been met. Legal instruments implementing the system have entered into force: New Zealand, Mauritius, the Republic of Korea and all countries members of the European Union and the European economic area. Other countries, in particular all those which participate in the meetings of the Subcommittee of Experts as well as Chile, Malaysia and Singapore, continue to revise and amend their legal texts, standards and guidelines to achieve implementation of the system as soon as possible.

3. Implementation of the prior informed consent procedure

48. The prior informed consent procedure assists countries in avoiding imports of hazardous chemicals that cannot be managed safely under national conditions. Chapter 19 of Agenda 21 called for the implementation of the prior informed consent procedures as soon as possible.[19] Built upon the voluntary prior informed consent procedure initiated by UNEP and FAO, the text of the Rotterdam Convention was adopted in 1998.

49. The Rotterdam Convention requires that chemicals and pesticides that have been added to the Convention because they are banned or severely restricted in at least one country in each of two regions shall not be exported unless explicitly agreed by the importing country. It also includes severely hazardous pesticide formulations that are too dangerous to be used in developing countries.

4. International networks and projects for information on chemicals

50. The functions of the SAICM secretariat include information clearing-house services to provide advice to countries on implementation, refer requests for information to relevant sources and generally facilitate access to information and expertise. The technical infrastructure of this information clearing house is essentially ready.[20]

51. SAICM has also assumed charge of the Information Exchange Network on Capacity Building for the Sound Management of Chemicals, which was established under IFCS. The Network is an Internet-based gateway to information for capacity-building.

---

[18] Resolution 1999/65 of 26 October 1999.

[19] Agenda 21 (note 1 above), para. 19.39 (d).

[20] SAICM document SAICM/ICCM.2/7.

52. A globally harmonized system for data collection on human poisonings, toxic exposures and chemical incidents has been developed by the IPCS INTOX programme, with the involvement of experts from over 60 countries. The database provides information for poison centre professionals and clinical toxicologists, and is available in many languages.

53. The international chemical safety cards is another project undertaken by IPCS in collaboration with the European Commission. The cards offer essential health and safety information on chemicals for use at the "shop floor" level by workers and employers in factories, agriculture, construction and other places of work. They are particularly useful in less developed areas and in small and medium-size enterprises.[21] WHO, in collaboration with ILO, continues to produce and update hundreds of safety cards each year. The cards have been translated into 24 languages and are available on the Internet in 17 languages.

D. Risk reduction and prevention

54. The principal tools of risk reduction are the substitution of harmful chemicals and the minimization of exposure to toxic chemicals through prevention, reduction or elimination of contacts. Risk reduction is based on science-based risk assessment, taking into account the costs and benefits as well as the availability of safer substitutes.

1. General principles of risk reduction

55. Risk reduction is one of the five key SAICM objectives. The SAICM Global Plan of Action includes 79 concrete risk reduction activities.

56. The private sector has also been involved in risk reduction initiatives through the development of safer alternatives, affordable sustainable technologies and green chemistry and commitments such as Responsible Care and the Global Product Charter.

57. Chemicals that are most often subject to risk reduction measures are (a) persistent, bioaccumulative and toxic substances; (b) carcinogens or mutagens that adversely affect, inter alia, the reproductive, endocrine, immune or nervous systems; (c) persistent organic pollutants; (d) heavy metals such as mercury, lead, cadmium or chromium; (e) chemicals produced or used in high volumes; (f) chemicals subject to wide dispersive use, such as pesticides; and (g) chemicals with high acute toxicity or physical danger (e.g. explosives).

58. Risk reduction programmes need to take into account different vulnerabilities, particularly (a) safeguarding the health of women and children through minimization of chemical exposures before conception and through gestation, infancy, childhood and adolescence; (b) promoting occupational health and safety of workers, by means such as national inspection systems and occupational health and safety standards; (c) protecting watercourses or terrestrial ecosystems from pesticides or industrial chemicals, for example by limiting spraying zones, waste water treatment and control of air emissions. It is important to apply appropriately the precautionary approach in applying safety factors and exposure limits.

[21] See www.ilo.org/public/english/protection/safework/cis/products/icsc/.

Box 3

Africa Stockpiles Programme

The Africa Stockpiles Programme is a multi-agency effort to address unwanted pesticides in Africa by eliminating existing stockpiles of Persistent Organic Pollutants and obsolete pesticides and preventing recurrence of similar stockpiling. The programme was started in 2000 with the intention of eliminating obsolete pesticides in all African countries by 2015. The estimated cost is $250 million. The programme is implemented by FAO, the Global Environment Facility (GEF) and the World Bank. Phase one has been implemented in Ethiopia, Mali, Morocco, Nigeria, South Africa, Tunisia and the United Republic of Tanzania.

Source: www.africastockpiles.net.

2. Global risk reduction measures

59. Progress in global risk reduction measures is covered elsewhere in the report. These include regulations on transport of dangerous goods, phasing out of ozone-depleting substances and Persistent Organic Pollutants, guidelines on pesticides, reducing risks in the workplace and new work on a legally binding instrument for mercury. Two additional items that need to be mentioned relate to heavy metals, especially mercury and lead.

60. The UNEP Global Mercury Partnership is the main international mechanism for activities on mercury, with an overall goal of protecting human health and the global environment from the release of mercury and its compounds. The areas of work include mercury-related (a) management in artisanal and small-scale gold mining; (b) control from coal combustion; (c) reduction in the chlor-alkali sector; (d) reduction in products; (e) air transport and fate research; (f) waste management; and (g) supply and storage.

61. Paragraph 56 (b) of the Johannesburg Plan of Implementation called for the phasing out of tetraethyl lead in gasoline to combat outdoor air pollution. UNEP played a pivotal role in developing an action plan with a focus on sub-Saharan Africa. Another important initiative since 2002 is the global Partnership for Clean Fuels and Vehicles,[22] a multi-stakeholder initiative (with 90 partners from Governments, civil society, international organizations and academia) to support developing countries in reducing emission of toxic chemicals by improving fuels.

62. However, although tetraethyl lead is one of the chemicals listed in the Rotterdam Convention, it is still used as a fuel additive in many countries. Under the prior informed consent procedure, 85 per cent of import responses for tetraethyl lead indicated consent to import, which reflects the continued use of this chemical.

[22] See www.unep.org/pcfv/index.asp.

Box 4
Impacts of chemicals on public health

Over 25 per cent of the global burden of disease is linked to environmental factors, including exposure to chemicals. Some 800,000 children each year are affected by lead exposure. The highest exposures occur in developing countries. Lead exposure affects intelligence levels and accounts for 2 per cent of ischaemic heart disease burden and 3 per cent of the cerebrovascular disease burden. Outdoor pollution and occupational exposure to chemicals account for 5 per cent and 9 per cent respectively of the global lung cancer disease burden. Asbestos, which remains in use in some countries, is known to cause lung cancer and mesothelioma. Unintentional poisonings kill an estimated 355,000 people each year. In developing countries, such poisonings are associated strongly with excessive exposure to and inappropriate use of toxic chemicals, including pesticides.

Source: WHO, *Preventing disease through healthy environments: Towards an estimate of the environmental burden of disease*, 2006, available at www.who.int/quantifying_ehimpacts/publications/preventingdisease/.

3. Emerging issues

63. Risk reduction programmes are urgently needed to address some emerging issues, including the use of nanotechnology in food, agriculture and consumer products, biotechnology and the management of electronic waste (e-waste). Nanotechnology and e-waste, along with chemicals in products and lead in paint, were identified as "emerging policy issues" at the second session of the International Conference on Chemical Management. Action may include assessment, registration, labelling, tracking, information-sharing, public dialogue, monitoring and further research.

E. Prevention of illegal traffic in toxic and dangerous products

64. Policies to promote chemical safety by regulating trade in dangerous substances were the earliest instance of international cooperation, including the Basel Convention. Agenda 21 defines the illegal traffic of chemicals as traffic carried out in contravention of a country's laws or applicable international instruments. Paragraph 23 of the Johannesburg Plan of Implementation recognized the importance of action against international illegal trafficking in hazardous chemicals and wastes, including the prevention of damage resulting from the illegal transboundary movement and disposal of such substances.

Other instruments on regulating transboundary movement of dangerous goods

65. One of the most important instruments for the prevention and control of illegal international traffic in chemicals is information-sharing and capacity-building of developing countries and countries with economies in transition. In this regard, the globally harmonized system (see para. 45 above) has been an important instrument for promoting consistency in national requirements. Similarly, the Rotterdam

Convention, besides being primarily an information-sharing tool, provides a mechanism for preventing illegal or unwanted trade in pesticides and related toxic chemicals by creating legally binding obligations for the implementation of the prior informed consent procedure.

66. The United Nations Recommendations on the Transport of Dangerous Goods (Model Regulations), elaborated by the Subcommittee of Experts on the Transport of Dangerous Goods, contain internationally adopted guidelines and principles that regulate the transport aspect of transboundary movement of dangerous goods. The 16th revised edition of the Model Regulations, published in 2009 (ST/SG/AC.10/1/Rev.16), contains requirements that are now fully integrated in all major legal instruments regulating international transport of dangerous goods by all modes of transport and are reflected in national regulations of most countries that produce, use or trade hazardous chemicals.

67. SAICM advocates the collaboration of Governments with the World Customs Organization in the dissemination and use of customs risk profiles and material safety sheets as official means of identifying probable cases of illegal traffic.

F. Monitoring

68. Monitoring is an essential tool to follow the state of the environment and the effects of chemicals on human health and the environment over time, and thereby to assess the effectiveness of national, regional or global measures to manage the risks of chemicals. However, monitoring of effects is scattered and only available for a limited number of chemicals. Data are especially scarce in developing countries.

1. Progress on monitoring

69. The International Society of Exposure Science has been a forum for reporting environmental monitoring methods and results for the past two decades. Much of the data come from scientists in the OECD countries, but methods of modelling exposure in workplace and community settings are transferable to conditions in other parts of the world. For example, air pollution monitoring methods developed in the United States have been applied in an oil refining community in Durban, South Africa.

70. A large body of information on biomonitoring of human blood and tissues exists in the scientific literature. For example, childhood blood lead levels have been monitored in the United States and reported by the Centers for Disease Control for the past three decades. Similar biomonitoring of childhood lead levels exists in many other countries and has been incorporated in the global burden of disease estimates. Biomonitoring data on Persistent Organic Pollutants have also been collected and reported in scientific publications and at scientific meetings for at least the past two decades. The international meetings on dioxin (see www.dioxin20xx.org) originally focused on human and environmental levels of dioxin and related compounds, but in recent years have expanded to include reports of a wide range of other halogenated compounds. Some of this information has reached the level of consistency whereby it can indicate trends over time in different geographical regions.

2. Monitoring related to international policies

71. The progress of implementation of SAICM will be evaluated by the International Conference on Chemicals Management at its sessions in 2012, 2015 and 2020. Indicators have been created for each of the five objectives under the Overarching Policy Strategy of SAICM, in total 20 indicators.

72. The first global monitoring report on Persistent Organic Pollutants (UNEP/POPS/COP.4/33) indicated that, in the regions and subregions where data were available, levels of Persistent Organic Pollutants in humans and in the environment were decreasing. While these trends are encouraging, monitoring activities need to be sustained and also extended to other regions.

73. Since 1991, the Arctic Monitoring and Assessment Programme has been collecting environmental and biological samples to assess the impact of Persistent Organic Pollutants, mercury and lead, among other contaminants. The 2009 report[23] notes a decline in levels of PCBs and DDT, but increases in brominated flame retardants and perfluorinated compounds.

74. A number of international studies on air pollution and health are under way or have published findings in various regions, including North America, Central and South America, South Asia and China.

75. Indicators are also needed to assess the effectiveness of the efforts undertaken, as well as the measurement of capacity to address newer chemicals, in particular those produced and used in higher volumes.

G. Means of implementation

76. Lack of financial resources and capacity is still a big obstacle to achieving sound management of chemicals, particularly in developing countries and countries with economies in transition. The rapid expansion of the chemical industry in developing countries and countries with economies in transition further strains the capacities of these countries.

1. Financing for sound management of chemicals

77. It is generally recognized that there are inadequate resources available to address chemical safety issues at national, regional and global levels, especially with regard to the main multilateral environmental agreements governing chemicals.

78. The new and additional funds needed for sound management of chemicals could run into billions of United States dollars per year. Existing bilateral and multilateral funding mechanisms do not project such volumes, nor have they attained the required level of long-term predictability and stability.

79. The allocation of resources to chemicals management in the budgets of developing countries and countries with economies in transition, or in requests for donor assistance, has to compete with other priority goals, including poverty

[23] *Arctic Pollution 2009*, available from www.amap.no.

eradication.[24] This calls for building greater synergies between poverty reduction strategies and sound management of chemicals.

80. In many non-OECD countries, chemicals management relies mainly on resources from bilateral donors and multilateral funds such as GEF and the SAICM Quick Start Programme for enabling activities. However, the Persistent Organic Pollutants window of GEF does not cover the broader issues related to sound management of chemicals. The resources available through the Quick Start Programme are very modest and only one project per country has so far been permitted. Furthermore, the Quick Start Programme is a time-limited programme, and there is little progress in developing a more permanent funding mechanism.

81. The volume of international assistance generally is below what is needed. In 2008, the Stockholm Convention secretariat assessed the needs of developing countries and countries with economies in transition for implementation of the Convention. It found that for the 2004-2009 period the implementation need was $3.3 billion compared with the Persistent Organic Pollutants funding level in GEF of $300 million — a more than 10-fold gap. That assessment covered only a few chemicals that are all largely phased out. The new Persistent Organic Pollutants and other problematic chemicals will require additional resources.

82. The one success story is the Multilateral Fund of the Montreal Protocol. It is a stand-alone financial mechanism to help developing country parties comply with the Protocol. It is the only global financial mechanism that is replenished with mandatory assessed contributions from developed countries. The Fund was replenished in 2008 with a further $490 million, bringing the total of funds close to $3 billion.[25]

Box 5
The SAICM Quick Start Programme

The Quick Start Programme is a voluntary, time-limited trust fund administered by UNEP to support enabling activities in developing countries and countries with economies in transition. It is open to contributions until 2012 and can make disbursements until 2013. Thus far, it has received $20 million from 21 donors and in-kind contributions, valued at over $23 million. Since May 2006, 82 projects (out of 185 applications) in 76 countries have been approved in the amount of $16 million.

83. SAICM foresees industry partnerships as one of the pillars of financial arrangements, but there are relatively few new partnerships, and the net financial contribution of existing partnerships is difficult to ascertain.[26]

[24] SAICM document SAICM/ICCM.2/13.
[25] SAICM document SAICM/ICCM.2/12.
[26] SAICM document SAICM/ICCM.2/12.

2. Technology transfer and technical cooperation

84. Technology transfer and cooperation are critical. Even when risks of certain chemicals to human health and environment posed are discovered, it is sometimes difficult for developing countries to replace them as they are highly effective and cheap to produce. Finding cost-effective and locally appropriate alternatives can be a technological and financial challenge for developing countries.[27] Often it is the production of the most toxic chemicals that is transferred to developing countries.

85. Most international agreements emphasize the importance of technology transfer and technical cooperation. SAICM emphasizes the need to strengthen partnerships and mechanisms to provide appropriate and clean technologies to developing countries and countries with economies in transition.

86. Article 12 of the Stockholm Convention includes a call for regional and subregional centres for capacity-building and technology transfer. In May 2009, the Conference of the Parties endorsed eight institutions for this purpose for a period of four years.

87. The National Cleaner Production Centres Programme of UNIDO and its transfer of environmentally sound technologies approach promote clean technologies and the preventive approach through demonstration projects to test the local feasibility of innovative technologies and methodologies.

3. Capacity-building

88. One of the obstacles in reaching the goal of sound management of chemicals is the widening gap in capacity between developed countries and others. Few non-OECD countries have the required legal, institutional, technical and personnel capacities or adequate laboratory capacities, to analyse chemicals in different media or monitor chemicals in the environment. Accordingly, SAICM stresses capacity-building needs and identifies 29 activities in national capacity-building, including a help desk to provide basic advice and refer requests to relevant agencies, promote chemicals-management instruments, facilitate scientific and technical training of customs personnel and establish national or regional laboratories.

89. Various United Nations agencies provide capacity-building support in this regard. IOMC has produced a range of training materials, including a guide to resource, guidance, and training materials of its participating organizations (www.who.int/iomc/saicm/resource_guide.pdf) and a strategy for strengthening national chemicals management capacities (www.who.int/iomc/publications/strategy_english/pdf).

90. Capacity-building activities under the UNITAR Chemicals and Waste Management Programme include a national chemical management profile (a comprehensive and systematic assessment of a country's infrastructure and capabilities) and SAICM enabling activities/integrated national programmes for chemicals and waste management (see www.unitar.org/cwm/inp) and specialized training in the globally harmonized system and pollutant release and transfer registers.

---

[27] UNEP, *Global Environment Outlook-4*, 2007.

III. Continuing challenges

91. The lack of adequate financial resources, including for the funding of activities concerning the remediation of contaminated sites, is still a major obstacle to achieving the 2020 goal. Countries need to make greater efforts to integrate fully the objectives of sound management of chemicals into national budgets and development cooperation. The link between chemical safety and sustainable development needs to be fully reflected in the funding decisions of bilateral development cooperation agencies.

92. The lack of prioritization of sound management of chemicals, which continues to be perceived principally as an environmental issue without regard to broader implications for sustainable development, is another continuing challenge. Correspondingly, there is a lack of effective "mainstreaming" of sound chemicals management throughout relevant sectors and into development strategies and plans.

93. In many instances, national legislation and policies on chemicals need to be reviewed, updated and strengthened. Where appropriate legislation is in place, there is a need to reinforce coordination mechanisms with international support and training on enforcement and compliance.

94. There is a continuous need for information-sharing, especially on chemical safety and the potential hazardous chemicals in products.

95. The engagement of multiple stakeholders in sound chemicals management needs to be strengthened.

96. It is important to promote synergies to achieve the goals of the national and international chemicals agendas. The coordination and cooperation among existing mechanisms, instruments and processes on chemicals management needs to be enhanced.

97. The implementation of systems for the prevention of major industrial accidents and for emergency preparedness and response needs to be strengthened.

98. Indicators and metrics, possibly with targets and timetables to assess progress on implementation of decisions, need to be developed.

99. Environment and health sector managers need to become more effective partners in the policymaking process by providing timely information and converting technical data into useable forms of information for effective decision-making on chemical safety.

100. There is an urgent need to strengthen cooperative action on emerging policy issues such as nanotechnology, biotechnology, and e-waste.